Compilers harnessed the power of computers to make programming easier by allowing programmers to specify calculations by entering a formula using infix notation..  
 Different programming languages support different styles of programming (called programming paradigms).  
Trial-and-error/divide-and-conquer is needed: the programmer will try to remove some parts of the original test case and check if the problem still exists.  
Proficient programming usually requires expertise in several different subjects, including knowledge of the application domain, details of programming languages and generic code libraries, specialized algorithms, and formal logic.  
  
The first compiler related tool, the A-0 System, was developed in 1952 by Grace Hopper, who also coined the term 'compiler'.  
They are the building blocks for all software, from the simplest applications to the most sophisticated ones.  
A study found that a few simple readability transformations made code shorter and drastically reduced the time to understand it.  
This can be a non-trivial task, for example as with parallel processes or some unusual software bugs.  
 Debugging is a very important task in the software development process since having defects in a program can have significant consequences for its users.  
In 1206, the Arab engineer Al-Jazari invented a programmable drum machine where a musical mechanical automaton could be made to play different rhythms and drum patterns, via pegs and cams.  
For example, when a bug in a compiler can make it crash when parsing some large source file, a simplification of the test case that results in only few lines from the original source file can be sufficient to reproduce the same crash.  
Integrated development environments (IDEs) aim to integrate all such help.  
There are many approaches to the Software development process.  
 After the bug is reproduced, the input of the program may need to be simplified to make it easier to debug.  
 Debugging is often done with IDEs. Standalone debuggers like GDB are also used, and these often provide less of a visual environment, usually using a command line.